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**December 7, 1993**

**Agricultural Research Service  
United States Department of Agriculture**

**United States  
Department of  
Agriculture**



**National Agricultural Library**

# The Agricultural Research Service Science Hall of Fame

The ARS Science Hall of Fame was inaugurated in 1986. We determined that each succeeding year, one or more present or former scientists with the Agricultural Research Service could be selected, subject to the following criteria:

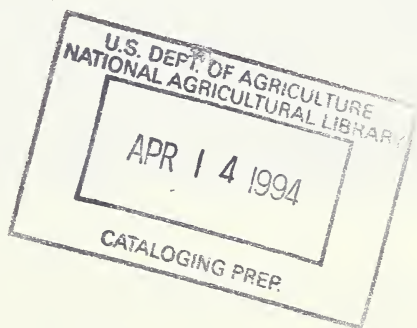
- The selectee made a major impact on agricultural research, either by the solution to a significant agricultural problem through research or by providing outstanding leadership that significantly advanced agricultural research.
- The selectee is a person whose accomplishments are still recognized by the agricultural research community.
- The selectee's character and record of achievement is worthy of emulation by younger agricultural scientists.
- The selectee's achievements must be or have been nationally and/or internationally recognized by peers in the scientific community.

Today we honor several outstanding scientists by inducting them into the Science Hall of Fame. A plaque citing the achievements of each will be on permanent display in the ARS National Visitor Center at the Beltsville Agricultural Research Center.

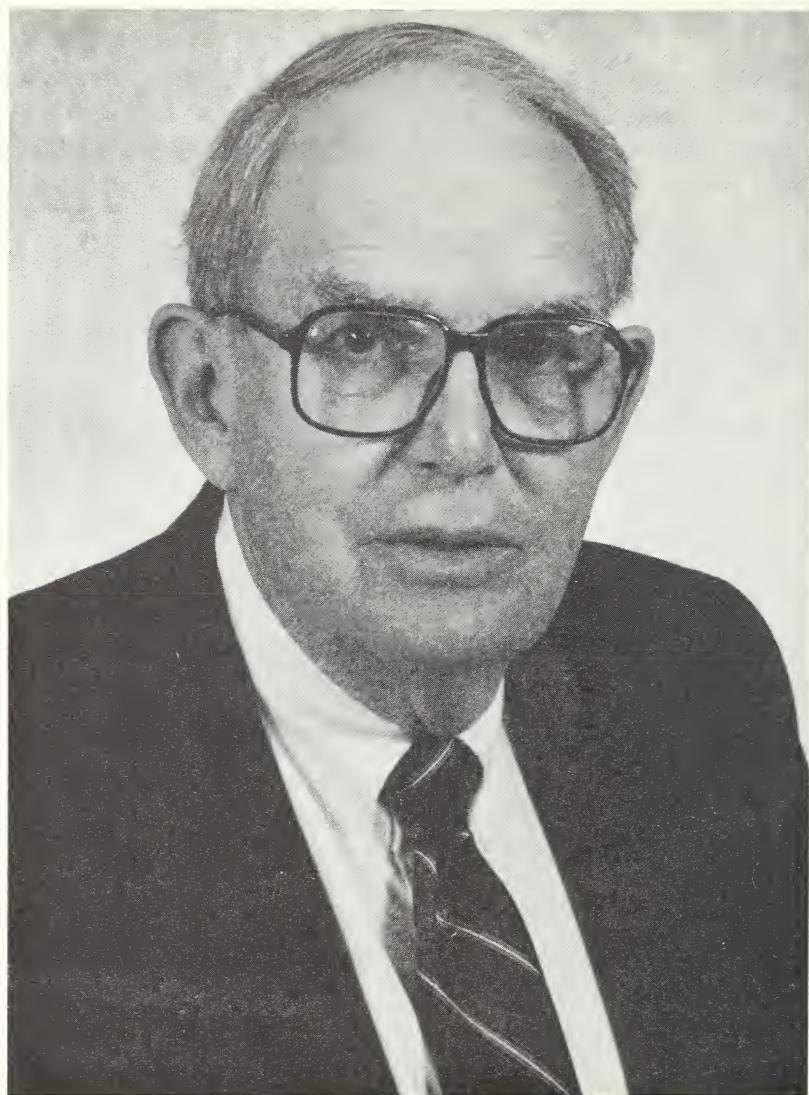


R. Dean Plowman  
Administrator

December 7, 1993







## **John R. Gorham**

Research Leader

Animal Diseases Research Unit

Pullman, Washington

*For scientific leadership and studies that have resulted in solutions of disease control problems and have advanced basic knowledge of viral and genetic diseases in humans and animals.*

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Dr. Gorham has an international reputation in slow virus diseases, fur animal diseases, and animal models of human genetic diseases. Gorham and his coworkers' most significant scientific accomplishments include pioneering research on slow virus diseases that showed that retroviral diseases of animals can serve as animal models of AIDS and rheumatoid arthritis. He first described and determined the control of Aleutian disease of mink, which has had enormous economic significance. He performed important immunologic investigations on canine distemper and developed a spray vaccine for mink distemper that is used worldwide.

Some of the many firsts to come from his laboratory include the rickettsial cause of salmon poisoning in dogs; isolation of the cause (vitamin E deficiency) of steatitis in pigs, mink, and cat; identification of a fatal disease, Chediak-Higashi Syndrome, in animals other than humans; a diagnostic test for bluetongue virus (an economically important disease in cattle and sheep); a vaccine against vesicular stomatitis in cattle; and a vaccine against feline panleukopenia. Gorham recently identified a coronavirus as the cause of epizootic catarrhal gastroenteritis of mink. Two virus strains and a procedure for virus propagation were named for him.

He has served as a distinguished USDA representative internationally and has served as a delegation leader, consultant, lecturer, and cooperating scientist to 37 nations, including the Soviet Union, China, Saudi Arabia, Australia, India, Bulgaria, and Argentina.

In 1991, Dr. Gorham was named ARS Distinguished Scientist of the Year and was elected into the National Academies of Practice. He is currently advancing the understanding of sheep scrapie and bovine spongiform encephalopathy, two diseases that are of great international interest in the spheres of basic and applied science.





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**Sterling B. Hendricks** (posthumous award)  
Chief Scientist  
Mineral Nutrition Pioneering Research Laboratory  
Beltsville, Maryland

*For significant contributions as a chemist, physicist, mathematician, plant physiologist, geologist, and mineralogist.*

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While Sterling Hendricks made numerous research contributions in diverse fields, he is best known for his work on plant photobiology. Enlisted by Dr. Harry Borthwick, Hendricks applied his extensive knowledge of biophysics to elucidation of the photoreceptor pigment that underlies the photoperiodic response of plants, control of seed germination, and other important photoregulatory events. Together with Borthwick, he succeeded in deducing the absorption spectrum of this pigment, using the techniques of quantitative action spectroscopy. Hendricks' insightful research approaches relied on his understanding that light treatments must be brief to avoid complications from secondary processes and must be of sufficient spectral purity to allow unambiguous characterization.

The photoreceptor was later named phytochrome. It was identified as a protein with linear tetrapyrrole pigment, similar to the algal photosynthetic accessory pigment phycocyanin. Phytochrome turned out to be widespread in plants, extremely sensitive to light, and present in very small amounts.

Hendricks, who received his initial recognition as a soil chemist, conducted x-ray diffraction studies that demonstrated the crystalline nature of colloidal clays. He contributed information on the synthesis of waxes and rubber in plants and on the nature of bone. He also pioneered the application of radioisotopes to the study of phosphate fertilizer transport and intake into plant roots.

An active member of many professional societies, Hendricks received many prizes and awards, including the USDA Distinguished Service Award in 1952, the Rockefeller Public Service Award in 1960, and the National Medal of Sciences in 1976. Dr. Hendricks died in 1981.



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## **Clair E. Terrill**

National Program Leader (retired)

Sheep and Fur Animals Research

Beltsville Maryland

*For scientific contributions and worldwide leadership  
in sheep production research.*

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Clair E. Terrill has been prominent in sheep research programs since 1936, when he first joined USDA's Sheep Experiment Station in Dubois, Idaho, where his work covered many phases of sheep breeding, from testing fertility of rams to forming inbred lines. From 1955 to 1972, he directed all Federal research involving sheep and fur animals. Work under his direction resulted in increased efficiency of meat, wool, and fur production from sheep and other animals. He helped introduce such technology as artificial rearing of lambs, pregnancy diagnosis, high fertility Finnsheep crossbreeding to increase the reproductive rate, and selection for year-round lambing.

Dr. Terrill has insisted that sheep research be of direct and immediate benefit to farmers. He developed the principle that selection research should always be aimed at increasing the rate of progress from selection and should involve taking risks that a farmer could not afford. Under his leadership, national research on predator control was instituted; this pathway led to a reliable method of determining predator losses of sheep and lambs. He demonstrated that predation was a major contributing factor in the decline of the U.S. sheep industry following World War II. He also developed a strategy for increasing efficiency of meat production from sheep without increasing feed demands: genetically increasing the lamb crop, culling low-producing adults at a younger age, and reducing lamb mortality.

Dr. Terrill has published over 200 articles on sheep breeding and production; his knowledge and expertise have been sought by leading sheep and goat producing countries throughout the world. Since retirement, he has continued to publish papers and participate in international and national conferences and symposia. A fellow of the American Society of Animal Science and the American Association for the Advancement of Science, Dr. Terrill has received many honors, including the 1972 Distinguished Service Award of the American Sheep Producers Council, an Indo-American Scholarship to India in 1985, and the 1990 Saddle and Sirloin Portrait Award.

## ARS Science Hall of Fame

**1986**

**Edward F. Knipling**

*For pioneering research and leadership in development of the sterile insect technique, which led to the eradication of the screwworm, and of other technologies to suppress and manage insect pests.*

**1987**

**Howard L. Bachrach**

*For pioneering research on the molecular biology of foot-and-mouth disease that led to development of the world's first effective subunit vaccine for any disease of animals or humans through the use of gene splicing.*

**Myron K. Brakke**

*For consistent, career-long valuable contributions to the science of virology, particularly plant virology.*

**Glenn W. Burton**

*For outstanding achievements in forage and turf science, which have had extraordinary effects on the forage-based cattle industry, the turf industry, and agriculture worldwide.*

**Wilson A. Reeves**

*For outstanding research and leadership in the field of textile chemical finishing that has significantly benefited agriculture and consumers.*

**Ernest R. Sears**

*For pioneering work in wheat genetics and for discoveries on chromosomal mechanisms that established standards in animal, plant, and human genetics.*

**Orville A. Vogel**

*For development of the first useful semidwarf wheats and of innovative production systems that made the Pacific Northwest a major source of soft white wheat, inspired similar research efforts throughout the world, and sparked the Green Revolution.*

**Cecil H. Wadleigh**

*For elucidating the mechanisms through which crops respond to salinity and water stress and for inspired planning and leadership that enabled and motivated those who worked with him to expand and make use of knowledge of soils, water, and air and their interactions with plants.*



## 1988

### **Francis E. Clark**

*For outstanding research leading to greater understanding of soil, plant, and microbial interactions and of nutrient cycling in terrestrial ecosystems.*

### **Edgar E. Hartwig**

*For research in soybean breeding and genetics that has been a major factor in soybeans becoming the second most valuable U.S. crop and particularly for developing cultivars that thrive in the South.*

### **Ralph E. Hodgson**

*For significant contributions to the knowledge of ruminant nutrition and for visionary leadership, both domestic and international, in the animal industries.*

### **Hamish N. Munro**

*For career-long contributions to the science of nutrition, particularly on the relationship of dietary protein and iron to the health of the elderly, and for promotion of studies on aging.*

### **Jose Vicente-Chandler**

*For research leading to new and greatly improved production systems for beef, milk, coffee, plantains, and rice for Puerto Rico and Caribbean countries.*

## 1989

### **Douglas R. Dewey**

*For world leadership in genetics and taxonomy of the Triticeae tribe of grasses and for development of the cytogenetic basis for creating new grass hybrids.*

### **Theodor O. Diener**

*For conceptualizing and discovering viroids, for leading research on viroid detection and control, and for inspiring new approaches in the search for causes of several serious diseases affecting plants, livestock, and humans.*

### **Karl H. Norris**

*For developing principles and instruments using the electromagnetic wave spectrum to make rapid nondestructive measurements for evaluating quality of agricultural products.*

### **John F. Sullivan**

*For engineering contributions to the food-processing and preservation industries, including development of instant potato flakes and of batch and continuous explosion puffing.*

## **1990**

### **Theodore C. Byerly**

*For extraordinary contributions as a scientist, research leader, and administrator to the success of agricultural research programs and advances in U.S. and world agriculture.*

### **Gordon E. Dickerson**

*For research contributions widely used by breeders to increase production efficiency of cattle, sheep, swine, and poultry.*

### **Robert W. Holley**

*For isolation and characterization, including the first nucleotide sequence, of transfer ribonucleic acid (tRNA).*

### **Virgil A. Johnson**

*For outstanding contributions to development of superior bread wheat cultivars and of improved wheat germplasm and for vigorous promotion of national and international cooperation among wheat breeders.*

### **George F. Sprague**

*For outstanding contributions to effective methods of hybrid corn breeding and germplasm improvement.*

## **1991**

### **John H. Weinberger**

*For outstanding lifelong contributions in development of fruit varieties and fruit breeding technology.*

### **Walter H. Wischmeier**

*For developing the Universal Soil Loss Equation, which has been widely used for three decades worldwide in conservation and management of our natural resources.*

## **1992**

### **Raymond C. Bushland**

*For pioneering research leading to screwworm eradication by the sterile insect technique and for research leading to control of typhus vectors.*

### **Lyman B. Crittenden**

*For significant contributions to retroviral genetics, transgenic animal development, and genome mapping in poultry.*

### **Arnel R. Hallauer**

*For increasing understanding and use of quantitative genetics in plant breeding, which has led to development of many superior corn hybrids worldwide.*







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